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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,319	02/20/2004	Martin Melchiors	PO7978/LeA 36,317	2166

157 7590 09/24/2008

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ART UNIT	**PAPER NUMBER**
1796	
MAIL DATE	**DELIVERY MODE**
09/24/2008	PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARTIN MELCHIORS, THORSTEN RISCHE, MARKUS MECHTEL, WIELAND HOVESTADT, TORSTEN POHL, and RAUL PIRES

Appeal 2008-2963
Application 10/784,319
Technology Center 1700

Decided: September 24, 2008

Before CHUNG K. PAK, CATHERINE Q. TIMM, and JEFFREY T. SMITH, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1, 3 through 5, and 12, all of the claims pending in the above-identified application. We have jurisdiction pursuant to 35 U.S.C. § 6.

We AFFIRM.

STATEMENT OF THE CASE

The subject matter on appeal relates to a method of preparing a polyurethane-polyacrylate dispersion. Further details of the appealed subject matter are recited in representative claim 1, which is reproduced below:

> 1. A process for preparing polyurethane-polyacrylate hybrid secondary dispersions, comprising
>
> (I) preparing a polyurethane (A) having an average molecular weight M_n, of from 1,100 to 10,000, which contains no polymerizable double bonds, in non-aqueous solution, by reacting
> (A1) the isocyanate groups of polyisocyanates with the isocyanate-reactive groups of an isocyanate-reactive component consisting of at least one compound selected from
> (A2) polyols and/or polyamines having an average molecular weight, M_n, of at least 400 and exclusively containing isocyanate-reactive groups selected from the group consisting of -OH and -NH groups,
> (A3) compounds containing at least one ionic or potential ionic group and at least one other isocyanate-reactive group which are selected from mono- and dihydroxy carboxylic acids, mono- and diamino carboxylic acids, mono- and dihydroxy sulphonic acids, mono- and diamino sulphonic acids, mono- and dihydroxy phosphonic acids and mono- and diamino phosphonic acids; salts of the preceding acids; and N-methyl diethanolamine; and nonionical hydrophilic compounds containing at least one isocyanate-reactive group, which are selected from polyoxyalkylene ethers containing at least one hydroxyl or amino group,
> (A4) compounds which are different from (A3) and (A5), have a molecular weight, M_n of less than 400, exclusively contain isocyanate-reactive groups selected from the group consisting of -OH and -NH groups, and are selected from alkane diols,

alkane polyols, ether diols, ester diols, diamines and polyamines, and
(A5) monofunctional, isocyanate-reactive compounds which are selected from monoamines and monoalcohols; and compounds which contain active hydrogen having different reactivity to isocyanate groups which are selected from compounds containing primary and secondary amino groups and compounds containing hydroxyl and amino groups,
optionally in the presence of vinylically unsaturated monomers which carry no groups that are reactive towards isocyanate groups,

(II) adding to the polyurethane solution (A), one or more vinylically unsaturated monomers (B) comprising a member selected from the group consisting of
(B1) acid-functional monomers,
(B2) hydroxyl- and/or amino-functional monomers,
(B3) monomers other than (B1) and (B2),
and subjecting the resultant mixture to free-radical polymerization in a homogeneous, non-aqueous phase to provide a hybrid polymer,

(III) optionally neutralizing at least some of any potential ionic groups introduced via component (A3), and

(IV) dispersing the hybrid polymer into the aqueous phase, wherein the neutralization can take place before or after the vinyl polymerization or during the dispersing step.

As evidence of unpatentability of the claimed subject matter, the Examiner relies upon the following reference:

Kagerer ('200)	WO 01/77200 A1	Oct. 18, 2001[1]

[1] The Examiner relies on US 2003/0124357 A1 (issued to Kagerer on July 3, 2003)(hereinafter "Kagerer '357") as the English translation of Kagerer '200. Appellants do not contest the Examiner's determination that Kagerer '357 is the English translation of Kagerer '200. Thus, our reference to Kagerer '200 is to the corresponding English translation (Kagerer '357) of record.

The Examiner rejects the claims on appeal as follows:

1) Claims 1, 3-5, and 12 under 35 U.S.C. § 112, first paragraph, as failing to provide written descriptive support for the presently claimed subject matter in the application disclosure, as originally filed; and

2) Claims 1, 3-5, and 12 under 35 U.S.C. § 102(b) as being anticipated by the disclosure of Kagerer '200[2].

ISSUES

With respect to rejection (1), the Examiner contends that claim 1 "contains subject matter that was not described in the specification in such a way as to reasonably convey to one of ordinary skill in the relevant art that the inventor(s), at the time the application was filed, had possession of the [later] claimed invention." (Ans. 3). According to the Examiner, there is insufficient support in the originally filed application for preparing polyurethane by reacting the isocyanate groups of polyisocyanates with the isocyanate-reactive groups of an isocyanate-reactive component as required by claim 1. *Id* at 3-4. Appellants, on the other hand, argue that "it would be well understood by one of ordinary skill in the art . . . that the NCO [i.e., isocyanate]-reactive groups [of the isocyanate-reactive component] are present in order to react with the NCO [i.e., isocyanate] groups of the polyisocyanates." (Br. 4).

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[2] The Examiner also rejects claim 2. (Ans. 4). However, claim 2 is no longer pending in this application and is not a subject of this appeal as is apparent from the Amendment received by the U.S. Patent and Trademark Office on September 12, 2005, and the Brief received by the U.S. Patent and Trademark Office on March 26, 2007. Accordingly, we limit the Examiner's rejection as being applicable to only claims 1, 3-5, and 12.

Thus, the dispositive issue is, therefore, has the Examiner demonstrated that the later claimed limitations "reacting . . . isocyanate groups of [polyisocyanates]" with "the isocyanate-reactive groups of [an isocyanate-reactive component]" recited in claim 1 introduce a new concept not provided in the application in violation of the written description requirement of 35 U.S.C. § 112, first paragraph?

With respect to rejection (2), Appellants contend that the phrase "consisting of" limits the isocyanate-reactive component to those listed in (A2) through (A5) recited in claim 1. (Br. 5-8). The Examiner responds, "[w]hile the members of . . . [reactive components](A2) to (A5) are closed by 'consisting of', the claims as a whole are not closed to other. . . [reactive components]. The preamble of the independent claim recites a process 'comprising' NOT 'consisting of' steps (I), (II), (III) and (IV)." (Ans. 6).

Thus, the dispositive issue is, therefore, does claim 1 exclude other reactive components not listed in (A2) through (A5)?

RELEVANT FINDINGS OF FACT (FF)

1. Claim 2, as originally written, recites that:

> The process according to Claim 1, wherein the polyurethane
> (A) is obtained by reacting
> (A1) polyisocyanates with at least one compound containing NCO-reactive groups, selected from the group containing
> (A2) polyols and/or polyamines having an average molecular weight M_n of at least 400,
> (A3) compounds containing at least one ionic or potentially ionic group and at least one further isocyanate-reactive group and/or nonionically hydrophilicizing compounds containing at least one

> further isocyanate-reactive group,
> (A4) low molecular mass compounds having a molecular weight M_n, of less than 400 which are different from (A2), (A3) and (A5) and contain at least two NCO-reactive groups,
> (A5) compounds which are monofunctional or contain active hydrogen of different reactivity, these building blocks being located in each case at the chain end of the polymer containing urethane groups.

2. The Specification, as originally filed, states (p. 14, ll. 22-23 and pp. 6-13) that polyurethane resin (A) is formed by **directly reacting** a polyisocyanate, which has an isocyanate group, with an isocyanate-reactive group of an isocyanate-reactive component.
3. The Specification, as originally filed, states (p. 6, ll. 13-18) "[t]he building blocks for preparing the polyurethane (A) are (A1) Polyisocyanates, and at least one compound which -contains NCO-reactive groups . . ."
4. Kagerer '200 at ¶ [0023] teaches "the novel graft copolymer based on polyurethane has been found, which can be prepared by graft copolymerizing at least one hydrophobic or hydrophilic polyurethane containing on average at least one thiol group with at least one olefinically unsaturated monomer in a solution or in an aqueous dispersion."
5. Kagerer '200 at ¶ [0053] states:

> the preparation of the polyurethane prepolymers for use in accordance with the invention has no peculiarities, but takes place . . .by the reaction of at least one polyisocyanate, in particular a diisocyanate, with at least one polyol, in particular a diol, the isocyanate component being employed in a molar excess, so that terminal free isocyanate groups result.

6. Kagerer '200 at ¶ [0055] teaches that the diisocyanates include, *inter alia*, 1,3-diisocyanatocyclohexane and 3,4-diisocyanatocyclohexane.
7. Kagerer '200 at ¶ [0047] states:

> The polyurethanes containing thiol groups [corresponding to the claimed isocyanate-reactive group] can be prepared by . . . reacting a polyurethane prepolymer having at least one, preferably at least two and, in particular, two free isocyanate groups in the molecule with at least one polythiol and/or at least one compound having at least one thiol group and at least one hydroxyl group.

8. Kagerer '200 at ¶ [0094] teaches, "the polyurethanes containing thiol groups are grafted in organic solution or in a dispersion with at least one monomer (a)."
9. Kagerer '200 at ¶¶ [0100]-[0102] teaches that monomer (a) includes, *inter alia*, methacrylic acid.
10. Kagerer '200 at ¶ [0046] states:

> the polyurethane containing thiol groups, depending on the nature of the stabilization, has an acid number or amine number of from 10 to 250 mg KOH/g (ionic stabilization or nonionic plus ionic stabilization) or of from 0 to 10 mg KOH/g (nonionic stabilization), an OH number of from 30 to 350 mg KOH/g, and a number-average molecular weight of from 1[,]500 to 55,000 daltons.

11. Kagerer '200 at ¶ [0078] teaches, "[o]ther examples of suitable polyols include polyether polyols, especially those having a number-average molecular weight of from 400 to 5000, in particular from 400 to 3000."
12. Kagerer '200 at ¶ [0051] states:

> The reaction of the polyurethane prepolymers with the compounds containing thiol groups has no peculiarities as to method but takes place in accordance with the customary and known methods of the chemistry of organic polyisocyanates . . . . Usually, the reaction is continued until free isocyanate groups can no longer be detected."

13. Kagerer '200 at ¶ [0137] states:

> [I]t is of advantage to use the dispersions of the invention, which are produced by the procedure of the invention either as primary dispersions or as secondary dispersions by dispersing the solutions of the graft copolymers of the invention in water, as they are for the preparation of aqueous coating materials, adhesives and sealing compounds of the invention, or as aqueous coating materials, adhesives and sealing compounds . . . In the coating materials utility, they exhibit outstanding film formation properties.

PRINCIPLES OF LAW

"The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claim language." *In re Kaslow*, 707 F.2d 1366, 1375 (Fed. Cir. 1983). The originally filed claims are part of the application as originally filed. *In re Benno*, 768 F.2d 1340, 1346 (Fed. Cir. 1985).

When a claim employs the transitional term "comprising," it is interpreted as not precluding the presence of additional ingredients and/or steps, which are not recited. *In re Baxter*, 656 F.2d 679, 686-87 (CCPA 1981). When a claim employs the limitation "consisting of," it is interpreted

as excluding any additional ingredients and/or steps not specified in the claim. *In re Gray*, 53 F.2d 520, 521-22 (CCPA 1931).

Under 35 U.S.C. § 102, anticipation is established only when a single prior art reference describes, either expressly or under the principle of inherency, each and every element of a claimed invention. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

ANALYSES

Rejection (1): Claims 1, 3-5, and 12 under 35 U.S.C. §112, first paragraph[3]

We determine that the Examiner has not demonstrated that the limitations "reacting . . . the isocyanate groups of [polyisocyanates]" with "the isocyanate-reactive groups of [an isocyanate-reactive component]" recited in claim 1 introduce a new concept not provided in the originally filed application. Claim 2, as originally filed, recites, "polyurethane (A) is obtained by reacting (A1) polyisocyanates with at least one compound containing NCO [isocyanate]-reactive groups selected from the group containing (A2) . . . [to] (A5) . . ." (FF 1). The Specification, as originally filed, also describes forming polyurethane (A) by directly reacting a polyisocyanate, which has an isocyanate group, with an isocyanate-reactive group of an isocyanate-reactive component. (FF 2, 3). Implicit in these

[3] Appellants do not separately argue the individual claims on appeal. Therefore, we select claim 1 as the representative claim consistent with 37 C.F.R. § 41.37(c)(1)(vii).

disclosures is that the isocyanate group of the polyisocyanate reacts with the isocyanate-reactive group of the isocyanate-reactive component to form polyurethane (A).

Thus, we agree with Appellants that the limitations "reacting . . . the isocyanate groups of [polyisocyanates]" with "the isocyanate-reactive groups of [an isocyanate-reactive component]" recited in claim 1 reasonably conveys to one of ordinary skill in the art that the Appellants had possession of the later claimed subject matter at the time of filing the application.

Accordingly, for the reasons stated by Appellants in the Brief and above, we reverse the Examiner's decision rejecting the claims on appeal under the 35 U.S.C. § 112, first paragraph[4].

Rejection (2): Claims 1, 3-5, and 12 under §102(b)[5]

Appellants do not dispute the Examiner's finding that Kagerer '200 teaches the claimed step (I), including reacting isocyanate groups of polyisocyanates with an (A2) compound containing isocyanate-reactive groups, the claimed step (II), including adding a vinylically unsaturated monomer (B1) to the resulting polyurethane solution, and the claimed step

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[4] Appellants appear to improperly rely on Ortel (Polyurethane Handbook (1994)) and Kirk-Othmer (Encyclopedia of Chemical Terminology (1997)) for the first time in this appeal to support their position on written description. *See*, e.g., 37 C.F.R. §41.33(d)(1). However, since the Examiner has not established a prima facie case of written description violation, we need not consider the sufficiency or propriety of these publications.

[5] Appellants do not separately argue the individual claims on appeal. Therefore, we select claim 1 as the representative claim consistent with 37 C.F.R. § 41.37(c)(1)(vii).

(IV), including neutralizing the dispersion[6]. (*Compare* Ans. 4-7 *with* Br. 5-8; *see* FF 4-13). Nor do Appellants dispute the Examiner's finding that Kagerer teaches forming a polyurethane by (1) reacting polyisocyanate with a polyol having the claimed properties to form a polyurethane prepolymer and (2) reacting the polyurethane prepolymer with, *inter alia*, a thiol group. (*Compare* Ans.3-7 *with* Br. 3-8; *see* FF 5-7). Rather, Appellants only argue that the phrase "consisting of at least one compound" limits the claimed isocyanate-reactive component to those compounds listed in (A2) through (A5) (e.g., compounds having a polyol group) and excludes all other isocyanate-reactive components (e.g., compounds having a thiol group). (Ans. 5-8). We do not agree.

As is apparent from claim 1, the phrase "consisting of at least one compound" recited therein limits *an isocyanate-reactive component* employed in the claimed reaction (A1) to those specifically listed in (A2) to (A5) of claim 1. However, such phrase does not limit additional isocyanate-reactive components employed in the claimed reaction (A1) to those listed in (A2) to (A5). Appellants, by virtue of employing the transitional phrase "comprising" in the preamble of the same claim, permit the presence of the

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[6] Appellants do not dispute the Examiner's finding that claim 1, by virtue of using the limitation "optional," encompasses a polyurethane-polyacrylate hybrid secondary dispersion process that does not employ the following three claim limitations: (1) "optionally in the presence of vinylically unsaturated monomers which carry no groups that are reactive towards isocyanate groups" of step (I); (2) "optionally neutralizing at least some of any potential ionic groups introduced via component (A3)" of step (III); and (3) "wherein the neutralization can take place before or after the vinyl polymerization during the dispersing step" of step (IV). (*Compare* Ans. 3-7 *with* Br. 3-8).

additional isocyanate-reactive components not listed in (A2) to (A5). Thus, we concur with the Examiner that claim 1, as a whole, does not exclude Kagerer's additional isocyanate-reactive component containing a thiol group.

To the extent that the limitation "consisting of at least one compound" is interpreted as limiting any isocyanate-reactive components employed in the claimed reaction (A1) to those recited in (A2) to (A5) of claim 1, we note that the transitional phrase "comprising" still does not exclude additional reaction steps employing additional isocyanate-reactive components, such as those containing thiols. To put it another way, claim 1, as written, does not preclude Kagerer's additional reaction steps involving thiols in preparing a polyurethane solution. Thus, we determine that the claimed process, as broadly recited, encompasses Kagerer's polyurethane preparation method[7].

Accordingly, based on the Factual Findings set forth above and in the Answer, we concur with the Examiner that Kagerer renders the subject matter defined by claims 1, 3-5, and 12 anticipated within the meaning of 35 U.S.C. § 102(b).

ORDER

The decision of the Examiner is affirmed.

[7] Further, as pointed out by the Examiner (Ans. 6), the term "reacting" in Step (I) does not exclude other subsequent reactions in said Step (I). There is no limitation in claim 1 that would exclude a step involving other reagents, for instance, after the recited reaction step, but prior to completion of polyurethane (A) and step (II).

TIME PERIOD

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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